

ARB STAFF RESPONSES TO COMMENTS ON TP-201.6 RECEIVED AFTER MARCH 4, 1999 WORKSHOP

1. Comment: The last section of Section 2 is lacking a period.

Response: Noted and corrected.

2. Comment: In Section 5.2, use of multiple smaller graduated cylinders is recommended instead of the specified 300 ml graduated cylinder.

Response: ARB staff notes that the sole use for the graduated cylinder is to add 150 ml of gasoline to the hose vapor passage and measure the amount not removed, and agrees that use of an oversized cylinder is undesirable. Noting that 250 ml is the smallest commonly available size that will hold 150 ml in one aliquot and that such cylinders are commonly graduated at 2 ml intervals, this type of cylinder has been specified. ARB staff considers measuring the pertinent volumes in multiple aliquots undesirable.

3. Comment: The procedure should include a blank data sheet for recording field data.

Response: A field data form has been added..

4. Comment: The test procedure is based on a very general procedure for investigating the behavior of liquid removal systems. While a simplified version is appropriate for inspections performed on installed systems, BAAQMD favors a more detailed investigation of liquid removal behavior in certification testing.

Response: ARB staff considers it desirable to base both certification and inspection testing on simple and economical procedures intended to efficiently determine compliance with clear cut requirements. More loosely defined studies aimed at investigating general behavior are better classified as research investigations and undertaken as such.

5. Comment: The 10 ml/gallon value specified for liquid removal is too restrictive; 5 ml/gallon is a value achievable by equipment in good working order. This test procedure should be reserved for certification testing and not used for verifying proper operation of installed stations. Use of mg/gallon units in this comment is assumed to be a typo.

Response: Staff agrees that the 5 ml/gallon liquid removal value is the correct value. Staff considers it reasonable to use this test procedure for periodic checks on installed stations because hanging hardware is sometimes incorrectly installed and potentially subject to deterioration over time.

6. Comment: Section 11 provides for a correction for volume VW lost due to adhesion to walls

of the vapor passage but this value is expected to be zero if the vapor passage has already been filled and wetted.

Response: This is a valid point and the procedure has been modified to ensure that an inappropriate correction will not be made. ARB staff notes that some evaporation may occur in transfer of gasoline to and from the hose.

7. Comment: If the test procedure applies to “inverted coax” hoses then 150 ml is too large a volume since it will fill 10 ft of hose if the I.D. is 0.312 inches.

Response: The procedure allows the volume of liquid to be reduced if 150 ml causes problems with the hardware such as premature shutoff. Some clarification of this provision has been added.

8. Comment: The actual requirement for liquid removal seems unclear. It is unclear whether liquid can be left in the vapor line.

Response: The requirement is stated in CP-201, Section 4.2.6.1. Although the value given in the 1996 revision is 10 ml/gallon dispensed at dispensing rates exceeding 5 gpm this a typo and systems in good working order should remove 5 ml/gallon dispensed. After dispensing 10 gallons, 100 ml could be left in the vapor passage; 50 ml must be removed for the system to pass. A reference has been added to CP-201 requirements as the default requirement where individual Executive Orders do not impose a liquid removal requirement.

9. Comment: Liquid removal rates are expected to vary, being quite rapid when the hose vapor passage contains a large amount of liquid and lower when less liquid is present and accessible to the removal device.

Response: The procedure measures an average removal rate achieved while 10 gallons is dispensed. Variation of the removal rate not really important because instantaneous values of the removal rate are not determined.

10. Comment: It is unclear whether this is a compliance test or a field test.

Response: The requirement must be met by systems to be certified and also must be met by installed examples of certified systems - the procedure is both a certification test and a compliance test. It applies wherever it is specified to support a certification requirement in CP-201 or a requirement in an Executive Order granting certification or an applicable district rule or permit condition. Staff believes this does not need to be stated in the test procedure itself.

11. Comment: The provisions for draining the hose, checking liquid retained in a supposedly dry hose which may have contained liquid, and subsequently correcting for liquid lost in wetting a hose which has been drained, filled, drained, and filled again are somewhat confusing and questionable.

Response: The procedure has been modified to eliminate inappropriate correction for liquid lost in wetting the hose's vapor passage.

12. Comment: Should there be some reference to or connection with the A/L ratio of the system?

Response: While liquid in the hose might affect A/L ratio, there is no connection between the liquid removal requirement and the A/L requirement. Both must be met independently. Staff considers this sufficiently clear in the test procedures and CP-201 that no change is required.

13. Comment: The proposed change from 10 ml to 5 ml liquid removal is an unwarranted relaxation of requirements.

Response: Requirements were originally based on testing of a variety of systems by BAAQMD which reports that the normal range of liquid removal for equipment in good repair is 5 ml/gallon dispensed to roughly 8 ml/gallon dispensed and considers 10 ml/gallon dispensed to be an impractical and excessively restrictive requirement. The intent of the requirement is to provide for removal of liquid which may be introduced into the vapor passage by condensation and occasional topping off. Formation of liquid by condensation is minimal and far below the 5 ml/gallon removal rate. Effectiveness in dealing with topping off problems is reflected in emissions control efficiencies achieved by systems in certification testing and indicates that 5 ml removal is an adequate removal rate. The introduction of the 10 ml value was a typographical error and its correction is not considered to be a "relaxation" of requirements. Rules promulgated by the SCAQMD, San Joaquin and Ventura districts all specify 5 ml/gallon unless otherwise specified in the Executive Orders. As far as staff is aware, none of the Executive Orders specify a liquid removal rate higher than 5 ml/gallon.

14. Comment: The justification for elimination of back pressure determination from the test procedure is unclear and should be furnished.

Response: The provision for determination of dynamic back pressure was part of a very generalized protocol intended for study of the effect of liquid removal on emissions control efficiency, not routine and economical determination of compliance with a fixed liquid removal rate. This excessively general procedure was inadvertently adopted for determination of compliance with the fixed liquid removal rate requirement specified in CP-201. No requirement relating liquid removal to the dynamic back pressure measurements or specifying a dynamic back pressure which must be achieved after the test is extant. The dynamic back pressure measurements are therefore superfluous.

15. Comment: On page 2 the provision for introducing a "smaller" amount of gasoline into the hose if necessary to avoid premature shutoff is vague and may be interpreted by some as license to introduce virtually no liquid at all.

Response: The text referred to is in the discussion of biases and interferences and is descriptive in nature. The instructions in Section 8 of the workshop draft were, however, also somewhat vague. Staff has modified the text to make it clear that unnecessary reduction of the amount of liquid introduced into the hose beyond the point necessary to reliably avoid premature shutoff is not acceptable.

16. Comment: In the second line of Section 4 the word lost is found twice; this is a typo.

Response: This has been corrected.

17. Comment: Section 7.3 requires that the underground tank be filled to an appropriate volume at least 24 hours prior to the test. This is irrelevant to liquid removal testing.

Response: In certification testing or compliance testing of a new facility it will be impossible to conduct the liquid removal test if the underground storage tank has not received an initial delivery of gasoline. Substantial differences in the behavior of the system may be manifested in the initial day or so after the tank's first filling as gasoline equilibrates with air in the vapor space. The applicability of the requirement to newly constructed facilities will be clarified.

18. Comment: There are no steps after step 1 of Section 8.

Response: Page 5 of the proposed draft was inadvertently skipped in preparing the double-sided handouts for the workshop. The full text of the method was available on the Internet to commenters.

ARB STAFF RESPONSES TO COMMENTS ON CP-201 RELATING TO LIQUID REMOVAL

19. Comment: In Section 4.2.6.1 a liquid removal rate of 5 ml per gallon should be required (current value indicated is 10 ml/gallon). The removal rate should be measured at delivery rates exceeding 5 gallons per minute as currently indicated unless the Executive Order for the system specifies another rate or rates.

Response: ARB staff agrees that the required liquid removal rate should be 5 ml per gallon; the 10 ml/gallon value appears to be a typographical error. Section 4.2.6.1 of CP-201 has been corrected accordingly. While delivery rates in excess of 5 gallons per minute may be typical practice of most customers, if a system achieves 5 ml/gallon liquid removal at lower delivery rates and if this performance is consistent with the emissions control efficiency demonstrated during certification and with the fueling rates selected by customers during the certification testing, then it will be reasonable to allow certification.